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Troubleshooting PBS Jobs

Common Reasons for Being Unable to Submit Jobs

DRAFT

This article is being reviewed for completeness and technical accuracy.

There are several common reasons why you might not be able to successfully submit a job to PBS:

- Resource request exceeds resource limits

  qsub: Job exceeds queue resource limits

  Reduce your resource request to below the limit or use a different queue.
- AUID or GID not authorized to use a specific queue

  If you get the following message after submitting a PBS job:

  qsub: Unauthorized Request

  it is possible that you tried submitting to a queue which is accessible only to certain groups or users. You can check the "qstat -fQ" output and see if there is an acl_groups or a acl_users list. If your group or username is not in the lists, you will have to submit to a different queue."

- AUID not authorized to use a specific GID

  If you get the following message after submitting a PBS job:

  qsub: Bad GID for job execution

  it is possible that your AUID has not been added to use allocations under a specific GID. Please consult with the principal investigator of that GID and ask him/her to submit a request to support@nas.nasa.gov to add your AUID under that GID.
- Queue is disabled

  If you get the following message after submitting a PBS job

  qsub: Queue is not enabled

  you should submit to a different queue which is enabled.

- Not enough allocation left

  An automated script is used to check if a GID is over its allocation everyday. If it does, that GID is removed from PBS access control list and users of that GID will not be able to submit jobs.

  Users can check the amount of allocations remaining using the acct_ytd command. In addition, if you see in your PBS output file some message regarding your GID allocation usage is near its limit or is already over, ask your PI to request for more allocation.

Common Reasons Why Jobs Won't Start

Once you've successfully submitted your job, there may be several common reasons why it might not run:

- **The job is waiting for resources**

  Your job may be waiting for resources, due to one of the following:

  - All resources are tied up with running jobs, and no other jobs can be started.
  - PBS may have enough resources to run your job, however, there is another higher priority job that needs more resources than what is available, and PBS is draining the system (including not running any new jobs) in order to accommodate the high-priority job.
  - Some users submit too many jobs at once (e.g., more than 100), and the PBS scheduler becomes swamped with sorting jobs and is not able to start jobs effectively.
  - In the case when you request your job to run on a specific node or group of nodes, your job is likely to wait in the queue longer than if you do not request specific nodes.

- **Your mission share has run out**

  Your mission shares have been used up. The available resources that you saw belong to other missions, which can be borrowed. However, your job may have requested a wall-time that is too long (more than 4 hours for Pleiades), which prevents your job from borrowing the resources.

  See also, Mission Shares Policy on Pleiades.

- **The system is going into dedicated time**

  When dedicated time (DED) is scheduled for hardware and/or software work, the PBS scheduler will not start a job if the projected end time runs past the beginning of the DED time. If you are able to reduce the requested wall-time so that your job will finish running prior to DED time, then your job can then be considered for running. To change the wall-time request for your job, follow the example below :

  ```
  %qalter -l walltime=hh:mm:ss jobid
  ```

- **Scheduling is turned off**

  Sometimes job scheduling is turned off by control room staff or a system administrator. This is usually done when there are system or PBS issues that need to be resolved before jobs can be scheduled to run. When this happens, you should see the following message near the beginning of the "qstat -au your_userid" output.

  ```
  +++Scheduling turned off.
  ```

- **Your job has been placed in "H" mode**

A job can be placed on hold either by the job owner or by someone who has root privilege, such as a system administrator. If your job has been placed on hold by a system administrator, you should get an email explaining the reason for the hold.

- **Your home filesystem or default /nobackup filesystem is down**

  When a PBS job starts, the PBS prologue checks to determine whether your home filesystem and default /nobackup are available before executing the commands in your script. If your default /nobackup filesystem is down, PBS can not run your job and it will put the job back in the queue. If your PBS job does not need any file in that filesystem, you can tell PBS that your job will not use the default /nobackup so that your job can start running. For example, if your default is /nobackupp10 (for Pleiades), you can add the following in your PBS script:

  ```
  #PBS -l /nobackupp10=0
  ```

Using pdsh_gdb for Debugging Pleiades PBS Jobs

DRAFT

This article is being reviewed for completeness and technical accuracy.

A script called *pdsh_gdb*, created by NAS staff Steve Heistand, is available on Pleiades under */u/scicon/tools/bin* for debugging PBS jobs **while the job is running**.

Launching this script from a Pleiades front-end node allows one to connect to each compute node of a PBS job and create a stack trace of each process. The aggregated stack trace from each process will be written to a user specified directory (by default, it is written to ~/tmp).

Here is an example of how to use this script:

```
pfe1% mkdir tmp
pfe1% /u/scicon/tools/bin/pdsh_gdb -j jobid -d tmp -s -u nas_username
```

More usage information can be found by launching pdsh_gdb without any option:

```
pfe1% /u/scicon/tools/bin/pdsh_gdb
```